



John Reich Journal

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JRCS

JOHN REICH COLLECTORS SOCIETY
P.O. Box 1680 Windham, ME 04062

The purpose of the John Reich Collectors Society (JRCS) is to encourage the study of numismatics, particularly United States gold and silver coins minted before the introduction of the Seated Liberty design, and to provide technical and educational information concerning such coins.

Annual dues\$25.00
 Life Membership\$625.00

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The John Reich Journal is the official publication of the Society and is distributed to all members in good standing. Members are encouraged to submit any articles encouraging the study of numismatics and / or relating to early United States gold and silver coins to the editors. Especially needed are articles containing new information about die marriages, die states of published die marriages, attribution methods, collections, collectors, etc.

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Cover Photos: 1836 B-3 small size quarter. One of the most dramatic LDS examples in the entire bust quarter series displaying both obverse and reverse breaks along with die buckling at the lower drapery. Popular and very collectible because it can be found easily with the breaks (R-1) although much tougher in the early die state. Owned by Glenn Marx.

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Editors' Comments

The annual ANA convention is here! Everyone going to the convention is packing and getting ready for a week's immersion in our hobby. It is time to renew old friendships and make new ones at the most interesting coin convention of the year. There will be numerous meetings, symposiums and a major auction in addition to the world class bourse.

Some important dates and times to remember include the JRCS annual meeting scheduled for Wednesday morning at 8AM in room 105B of the convention center. Dick Graham will be giving a presentation on Reeded Edge Bust Half Dollars. He has authored a book on the attribution points for the Reeded Edge Halves and may even have some for sale at the convention if all goes well for him. This should be a very interesting and informative presentation. Later in the day the Bust Quarter Society Meeting is planned in room 105A.

Those of you arriving on Tuesday may be interested in one of the Money Talks presentations scheduled for 3PM. Member, David Finkelstein will be giving a talk, "Analysis of Heraldic Eagle Silver and Gold Coins, 1796-1807" in room 104B. This will be followed immediately by Joel Orsz and Len Augsburg giving a talk about their book *The Secret History of the First US Mint* which received the NLG's book of the year award last year. You will get two great presentations without leaving your semi-comfortable chair!

On Tuesday evening beginning at 6PM, Stack's /Bowers will have the fourth session of their ANA auction which will include the Bust Dime collection formed by our founder, David Davis. Many plate coins from the book will be sold as well as major die marriage rarities and condition census coins. This will be a must for any of the dime collectors in the society.

The lineup for Thursday includes Jim Wells talk at 10AM, "The War of 1812; The Notables, The Navies, The Numismatics". Robert Hoge will have a Money Talks presentation at 1PM "First Order of Business; The US Mint's Original Coinage Denominations, 1793-1796". The Bust Half Nut Club's general meeting is scheduled for 2PM that afternoon.

Friday morning offers both an annual meeting and a Money Talks presentation at 9AM that may interest the membership. Don Kagin will give a presentation at Money Talks titled, "The War of 1812". The Early American Coppers (EAC) meeting is also scheduled at the same time. Later in the morning at 11:30 the Numismatic Bibliomania Society (NBS) meeting will be held which includes a fund raising auction. Those of us who collect numismatic literature never miss this lively meeting.

Those in attendance on Saturday will have the choice of a 9AM Colonial Coin Collectors Club meeting and a 1PM talk by Jamie Franki, "David Rittenhouse and the 1792 Half Disme". Also, my Amigo, Ricardo de Leon Tallavas, will be giving a talk at Money Talks at 2PM titled, "The Establishment of the Banking System in Mexico, 1864-1910". If you have never heard Ricardo speak, make plans now, you will be in for a real treat.

Remember to participate in the next JRCS census, the R4-8 Capped Bust Half Dollars which will be compiled by Steve Herrman. The information for submitting your census to Steve is featured in the box below. See you in Philadelphia!

NOTICE: CAPPED BUST HALF DOLLAR COLLECTORS

Capped Bust Half Dollar Census information for R4 to R8 die marriages is now being solicited for inclusion in the next issue of the **John Reich Journal**.

Please send your complete inventory listing (including ALL duplicates and die states) of R4 to R8 Capped Bust Half Dollar die marriages to Steve Herrman.

Email: **Herrman102@aol.com**

FAX: **303-989-6393**

Note: The top 15 collections shall each be identified by the JRCS membership number of the submitter. Duplicates will be counted and reported as part of the totals. Your personal census will be kept strictly confidential, and shall not be used for any other purpose.

See the complete listing of coins for the census on page 27.



Is it Time for a New Remarriage Chart for Capped Bust Half Dime Reverse G?

Richard Meaney

One of the more intriguing aspects of Capped Bust Half Dimes has been collecting, studying, comparing, and contrasting the die remarriages that occur in the series. I think I like focusing on die remarriages because I see them as a less-popular and often-misunderstood subset of the Capped Bust Half Dime series (note: for a review of die remarriages, see my article "Understanding Capped Bust Half Dime Die Remarriages" in the December 2006 John Reich Journal).

The purpose of this article is to closely examine the Reverse G die remarriages (1829 LM-13 and 1830 LM-1) in order to address questions and potential new information brought about by Capped Bust Half Dime specialists. Specifically, I will provide a revised die remarriage chart for Reverse G.

In the excellent text Federal Half Dimes 1792-1837, Russ Logan and John McCloskey tell us that Reverse G was used for four die remarriages. *In emission order*, the four Reverse G remarriages are the 1829 LM-13.1, the 1830 LM-1.1, then the 1829 LM-13.2, and finally the 1830 LM-1.2. The authors provide readers with a remarriage chart for Reverse G (see page 67 of the text) and die state descriptions for each of the four listed remarriages. Fellow specialists and I have spent dozens of hours discussing this remarriage for a few reasons:

- Some believe the die state descriptions in the remarriage chart are wrong or incomplete
- Some believe the die state descriptions listed for each of the four remarriages throughout the text are wrong or incomplete
- Some believe the pictures of coins shown in the text as examples of a particular die remarriage are of a different die remarriage than the one claimed by the authors
- Some believe coins have been discovered in the past few years that demonstrate the existence of a new, unlisted die state (preceding the 1830 LM-1.1)

Methodology

In order to accomplish my purpose, I needed to rely on something other than intuition and "what I could recall" about the many examples I have seen of Capped Bust Half Dimes that use Reverse G. I talked with fellow specialists and borrowed coins and collected images of Capped Bust Half Dimes that use Reverse G. The goal was to gather enough coins, and enough of "the right coins" to make definitive or nearly-definitive conclusions.

Once I had enough of the right coins, I started to catalog die markers and compare the die markers I could see with the die state descriptions and die remarriage chart of Federal Half Dimes 1792-1837 to determine if collectors should reconsider how they categorize Reverse G die remarriages.

My Conclusion

I believe that the remarriage chart for Reverse G should list the following emission sequence (note the lack of distinction between 1829 LM-13.1 and 1829 LM-13.2):

First use: 1830 LM-1.1

Second use: 1829 LM-13

Third (final) use: 1830 LM-1.2

There are two essential elements supporting this conclusion:

The first supporting element: I have found two 1830 LM-1 Capped Bust Half Dimes that are mint state and show no evidence of the die clashing that occurred during the striking of the 1829 LM-13 and no die deterioration characteristics later than those found on the 1829 LM-13. In fact, the two coins show very few die deterioration effects whatsoever. One coin is graded NGC MS-65PL and the other coin was formerly in an NGC MS-63 holder and currently resides in a PCGS MS-61 holder (images of the reverse of each coin are below).



NGC MS-65PL 1830 LM-1.1



PCGS MS-61 1830 LM-1.1

I also examined a number of circulated examples of the 1830 LM-1 die marriage. Typically, these examples were in the Very Good to Very Fine range. I did not note die clashes or other tell-tale die deterioration effects on many of these coins; however, I decided to NOT base my conclusion on these well-circulated coins. I did not feel that these coins provided *unmitigated evidence* for the existence of a

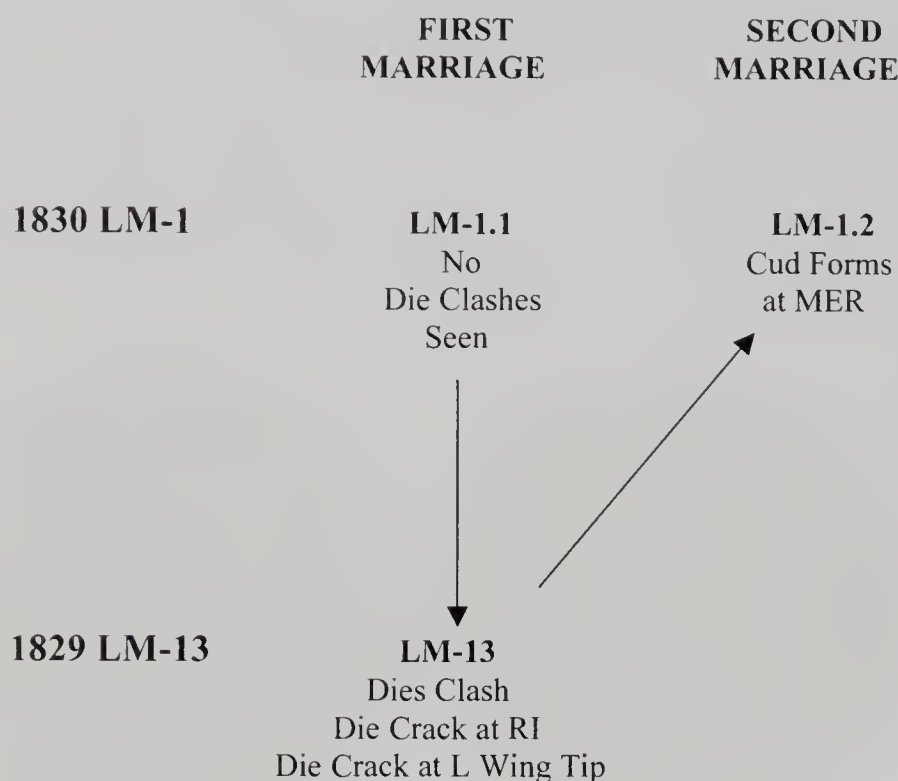
die remarriage earlier than the 1829 LM-13. To those collectors that own coins that are well-circulated and appear to be early enough die state to be classified as 1830 LM-1.1, I offer the following caution: Do not automatically conclude that well-worn coins that apparently demonstrate no clash marks or cracks must be examples of the 1830 LM-1.1 die remarriage. Advanced wear can cause evidence of die state to dissipate, so it may be inappropriate to attribute heavily-worn coins as 1830 LM-1.1. I recommend such conclusions be reserved for AU to mint state coins. Some worn 1830 LM-1 examples that I examined and considered during this study are pictured below.



The second supporting element: Examining multiple 1829 LM-13 reverses and inspecting for die deterioration characteristics showed me that none of the 1829 LM-13 coins appeared to be struck before the mint state 1830 LM-1.1 half dimes pictured earlier in this article). Further, none apparently were struck after the 1830 LM-1.2 (which is in line with the findings of Logan and McCloskey).

In order to best represent my findings, I have created descriptions of what I believe to be proper die markers for each of the die remarriages that use Reverse G. Since most collectors use (or *should use*) the die remarriage charts found on pages 65-77 in the Logan-McCloskey text, I decided to present my recommended die markers in a fashion similar to that used by the authors. I have created a new die remarriage chart for Reverse G that collectors might consider using when assessing a coin and attempting to determine the correct die remarriage. An explanation of the changes to the die remarriage chart is below the chart.

REMARRIAGE CHART FOR REVERSE G



Explanation of the chart:

First use of Reverse G, 1830 LM-1.1: No evidence of die clashes.

Second use of Reverse G, 1829 LM-13: During the striking of this die remarriage, the dies clashed. During the striking of the 1829 LM-13, a die crack develops at RI. A die crack at the left wing tip develops.

Third (final) use of Reverse G, 1830 LM-1.2: During the striking of this die remarriage, some rather remarkable die deterioration occurred. Multiple cuds can be found on examples of this die remarriage.

In closing, I want to offer a few words about using this (or any other) die remarriage chart and illustrate use of the chart for Capped Bust Half Dimes that use Reverse G. In my article "Understanding Capped Bust Half Dime Die Remarriages" in the December 2006 John Reich Journal, I paraphrased the authors' (Logan and McCloskey) most important "rule" in determination of a specific coin's die remarriage attribution using the die remarriage charts: "Collectors must remember that all of the previously noted die deterioration attributes (shown on the flow charts) for a specific die remarriage should be plainly visible on the coin in question."

A simple die deterioration study, with images, might look like this:

First Use of Reverse G,
No Die Clash Marks Seen:



Second Use of Reverse G,
Clash Marks, Die Cracks Evident:



Third Use of Reverse G,
Cud Forms at MER:



Robert Scot's Engraving Report to the Congressional Committee on the Mint

William Nyberg

Robert Scot was Chief Engraver of the United States Mint from November 23, 1793 until his death on November 3, 1823, and he is certainly one of the most misunderstood persons employed during the struggling early years of the Mint. I became interested in Scot while researching early half dollars about eight years ago, the lack of information on his background and conflicting opinions of his work initiated my investigation into the life of Robert Scot. By 2008, I had uncovered enough unpublished archival information on Scot that I decided to begin writing a biography on him.

Contrary to the harsh criticism that is sometimes subjected to Scot, contemporary accounts regard him as being among the best, or the best, of American engravers at the time, with his work always being in high demand. Thomas Jefferson assessed Robert Scot's ability on October 21, 1780, stating, "the workmanship was extraordinarily good." Scot was formally educated and trained in all aspects of drawing and engraving in Edinburgh, Scotland, and as such was one of the few professionally trained engravers when he immigrated to America and began engraving in 1775.

Scot was a very prolific engraver during his forty eight year career in America, with hundreds of documented engravings in addition to his coinage dies, including paper money, bookplates, certificates, scientific illustrations, maps, government and private seals, embossed stamp dies, and medals. Much of Scot's work included American patriotic iconography which depicted the anarchical overthrowing of tyranny, the glory of victory and independence, and provided a constant attention to the ideals of liberty.

The work of Robert Scot in the early 1790's was dominated with the enormous engraving effort to support Scottish immigrant Thomas Dobson's publication of his *Encyclopædia*, an American edited version of the third edition of the *Encyclopædia Britannica*, and the first encyclopedia to be printed in America. Nineteen Philadelphia area engravers worked on the project, with Robert Scot contributing the largest number of individual engravings for the *Encyclopædia*, by a wide margin.¹ Scot extensively searched locally and nationally for a competent journeyman engraver to assist with his heavy workload, finally hiring Samuel Allardice, another

Scottish immigrant, as an apprentice in 1790. Scot retained his private engraving firm after his commission as Chief Engraver in 1793, with his employees performing the vast majority of the engraving work. In 1794 and 1795, the partnership of Scot & Allardice was the largest engraving firm in the United States with five engravers.

While researching the Philadelphia Mint archives in 2010, I came across a four page undated letter regarding engraving that was written and signed by Robert Scot.² This letter was previously mentioned by Robert Hilt, and has been seen by a few other researchers.³ The Scot engraving document has been largely overlooked in recent years because it was filed in an obscure folder titled "Anonymous Letters Received, 1792-1900," which also contains dateless general letters. The Scot document was previously filed under "General Correspondence," and could have been relocated by 1997, when the current finding aids were recorded.

The letter by Scot was written to the "Committee on the Mint" and gives extensive answers to four questions asked by the Committee, in a report format. The Committee on the Mint was under the leadership of Elias Boudinot, an attorney and a Representative in Congress from New Jersey who was responding to attacks on the cost and operation of the Mint. The goal of the Committee on the Mint was "to examine and report on the state of" and to determine "what further measures are necessary to render the institution more beneficial."⁴

Scot's articulate description of engraving processes is unique among the scant engraving and die sinking information recorded at the early Mint. It is the most comprehensive and important engraving document in the first thirty years of the Mint, and deserves to be published in its entirety for its numismatic significance. The Scot Report could be considered the Holy Grail of early US Mint engraving documents.

The Scot Engraving Report

“To Questions put to the Engraver by the Committee on the Mint, he submits the following replies and remarks for their information.

1st The actual Duties of the Engraver he conceives to be the Engraving or Sinking all the Dies necessarily required for the Coinage in the Mint.

Though the actual Duties of my office may require my furnishing all the Dies necessarily demanded for the Coinage in the Mint, that demand may be greater than 'tis possible for me to supply with my own industry; and no doubt it will sometimes be the case, which makes it necessary on such occasions to be allowed an assistant.

It may be necessary in this remark to enumerate (to the committee on the Mint) what I think the actual duties of my office are. Viz. Engraving and sinking all Original Dies, raising and finishing all Hubbs that are struck out of them, and raising and finishing all punches that may be requisite to the completion of Dies or Hubbs; letter punches excepted. These may be imported or procured from those of that profession.

2^d At present there is an assistant Engraver, whose duty is to assist (if capable) in all the actual Duties of the Engraver. His Compensation is One Dollar Sixty Cents every day he works.

3^d I have not hitherto experienced in the execution of my Duty, any inconvenience from the Law as it now stands, yet nevertheless, the Duties of the Office may be subjected to inconveniences therefrom, by that particular clause which respects the preparing of Dies.

The Chief Coiner who has at his command a number of Artists, has hitherto furnished me with Dies ready prepared to Engrave on, but as that is no part of his Official Duty, that favor may be withheld at his pleasure. As a remedy for this small inconvenience it might be eligible for the Director to order an Artist on the same footing with the others in the Chief Coiners department, who shall be capable in Forging, Filing and Turning, Hardening and Tempering all Dies and Hubbs, and punches, necessary for the use of the Engraver; and where not employed therein (for there will not be a constancy of employment in that line) to assist the Chief Coiner.

4th

The time it takes to Engrave Dies for the different Coins of the United States, can not as yet be precisely ascertained, as it has hitherto depended on a combination of previous circumstances, [illegible] various in their issues. Neither can the time they will last be determined; as this last rests on as uncertain criteria as the former position.

Before a Die to strike money can be made, the previous step is to Engrave an Original one first. The execution of that of the head of the Cent will take four or five days, and if it is hardened with success, a Hubb is struck out of it (that is an impression in steel) but if otherways, which is not unfrequent; it is to begin de novo. The Original Die being compleat, and Hubb struck; by failure in hardening it, it becomes useless immediately, or very soon so. On the success of these processes and that of a good clear and distinct impression in striking the Hubb, depends on the celerity with which the Dies that strike the money can be finished, for they are struck with the Hubb previous thereto. With a compleat success in the preceeding processes which has hardly ever happened, a head Die as above may be finished in a day. The same may be reckoned on the half Cent head Die, and the same length of time for the Dies of their respective reverses. All other Dies are subject to foregoing preparations and incidental circumstances. The Dollar original Die for the head, will take six or eight days. The same Die for its reverse, nearly the same time; and after their Hubbs are compleated, a head Die for striking money may be finished in two days, and the same Die of the reverse in the same time nearly. The half Dollar Dies, Original and others in all their various processes may take nearly the same time with the Dollar Dies in the same circumstances. The half Disme original Die for the head, may take about five days, and its reverse Die of the same kind, six. A day for the former and a day and a half for the latter in finishing the Coining Dies may be sufficient.

The other Dies not enumerated, experience has given less information as to the times they may take respectively; for none of them have been executed yet. But suppose the Eagle to be equal to the half Dollar, the half Eagle and quarter Dollar to the Cent, and quarter Eagle and Disme, somewhat more than the half Disme.

It is always to be understood, that the same difficulties are incidental to all Dies throughout their progress, and 'till they are ready to strike money.

From the same source of uncertain decision whereby the time of executing the Dies cannot be ascertained, arises the same difficulty of determining how

long they will last. Namely, the precariousness and uncertainty of hardening and tempering the Dies, whereby they are often lost without striking a single Coin; and in proportion as these processes (perhaps combined with that of Forging) have been more or less successful, Cents at a mean have been struck from the same Dies i.e. from each pair to the amount of about Twenty Thousand; & Half Cents, Twelve Thousand. None of the other Coins have been struck as yet in such abundance as to furnish sufficient data whereby to estimate how many their respective Dies will strike.

Rot Scot Engraver

[The Engravers] Report
Robert Scot''

Analysis of the Scot Report

Robert Scot's use of the English language, with a Scottish slant, is quite amusing. Scottish Standard English and its distinctive vocabulary was the prevalent dialect among the urban centers during the Scottish Enlightenment of the eighteenth century. Scot had a strong cultural alliance with his fellow Scotsmen, keeping the traditions of their homeland alive with membership in the St. Andrews Society of Philadelphia, and as a Freemason.

Terminology used by Scot for various coinage dies was also interesting. Die was always capitalized, "Original Die" is now commonly referred to as master die, and "Hubb" was spelled with two b's. The most interesting of all is "Die to strike money" which referred to a working die. Scot also used "Coining Die" for working die, which is still used today as a standard industry tool code for an application of a die to form a small metal object. Scot's "head Die" was an obverse die.

The process description by Scot indicates that he began the engraving of a denomination with the estimated four to eight days needed for an original die. The total flow time for the die series of a denomination would also need to include the time for the forging and lathe turning of the die bodies, and for the heat treating operations. Assuming working die bodies were forged and turned ahead of time, the

time to finish a working die would be Scot's estimate of one to two days depending on the denomination, plus the time to harden and temper the working die, which could be less than a day if the person responsible for the hardening was available.

Robert Scot's mention of the "Law" refers specifically to the *Coinage Act of 1792*, which established the United States Mint and set guidelines, including the important design parameters of having "an impression emblematic of liberty" and on the reverse of the silver and gold coins "the figure or representation of an eagle." Scot alluded to the clause in Section 3 of the *Coinage Act* that stated "it shall be lawful for the functions and duties of Chief Coiner and Engraver to be performed by one person." Mandating one person to perform the functions of coiner and engraver was not practical, as the two functions required different sets of skills seldom possessed by one person. Chief Coiner Henry Voigt was more experienced in metalworking that included forging, lathe turning, and the heat treating operations of annealing, hardening, and tempering of steel. Conversely, Scot was a trained artist with years of engraving experience, but with limited metalworking skills.

It is very apparent from the Scot Report that the most serious issue involving the fabrication and engraving of coinage dies was the lack of understanding to appropriately heat treat the dies during the hardening and tempering operations.⁵ The knowledge of metallurgy for steel was at an embryonic state at the time, there was an absence of temperature controlled ovens, and all heat treating was done by sight and guesswork. From Scot's commentary, there were many, many hubbs and "Dies that strike the money" that had failed before use by cracking from thermal shock while heating and quenching during the hardening process, or from developing cracks early in usage. This explains some of the rarity of R-7 and R-8 die marriages, and indicates the potential for discoveries of new die marriages.

Robert Scot explained "At present there is an assistant Engraver," who was John Smith Gardner, hired in November of 1794. Finding adequate assistant engravers was not easy for the early US Mint. Thomas Dobson dominated the most capable local engravers for his *Encyclopædia*. Prominent Philadelphia publisher Matthew Carey had to find engraving help out of state with Amos Doolittle of Connecticut and Benjamin Tanner of New York.⁶ When historian Jeremy Belknap wanted to have a map engraved in 1791, Ebenezer Hazard could not find any decent engraver for

him, as Dobson had all of them working for himself.⁷ The known engravers who worked for Robert Scot in his private firm never engraved for the US Mint, as they had a large backlog of work with Philadelphia publishers.

John Smith Gardner was an enigma among Philadelphia engravers. While other engravers, including those at the Mint, had documented engravings, John Smith Gardner did not. There are no signed time period engravings by Gardner at the major United States research institutions, no Gardner listing in any of the multiple Philadelphia City Directories, and no advertisements for his engraving work in newspapers. American and British engraving references do not list Gardner.⁸ His only engraving record is with the US Mint. This indicates that Gardner served as an apprentice or assistant with an experienced engraver for a relatively short time before his Mint employment (and possibly with Scot). There are only two letters known from Gardner, one asking for an increase in pay on August 11, 1795, and the other requesting a position as a refiner and melter on February 18, 1796. Gardner had requested that he be sent to England for training as a refiner and melter, at the Mint's expense, which did not transpire.⁹ He apparently had no desire to continue engraving, as Gardner stated "I find myself willing to relinquish my present engagement [assistant engraver] to enter into that."

While John Smith Gardner may have had the potential to become an excellent engraver, it is extremely improbable that Gardner had the experience to engrave any master hubs or original dies for the Mint, as has been suggested by various authors. Gardner had no recorded engraving activity before or after his Mint employment, ascertaining that he had only limited engraving experience. The complexity of engraving an original die requires far greater experience and ability than punching letters, engraving dentils, and lapping to finish a working die. Gardner's August 11, 1795 letter explains that he engraved reverse dies for all denominations, which in all probability was limited to the finishing of working dies, as Scot had completed the original dies as explained in his report.¹⁰ While the Heraldic Eagle reverse had not been created at the time of the 1795 letter, Gardner probably finished some early working dies of this design type, with Scot engraving the complex master hubs.¹¹

As further evidence that Robert Scot engraved all of the original dies and hubbs (until the period that John Reich was employed from 1807 to 1817) is Scot's

emphasis on what he thought “the actual duties of my office are,” which were the engraving and sinking of the original dies, raising and finishing of the hubbs, and fabrication of some punches, but no mention of “Dies that strike the money.” Although in his preceding paragraph Scot stated that his duties “may require my furnishing all the Dies,” which would include “Dies that strike the money,” he also stated that at times the demand could be greater than could be supplied “with my own industry,” necessitating an assistant Engraver. This was definitely the case during the time frame of late 1794 through much of 1796 when Gardner was assistant Engraver, and coinage dies for an amazing ten denominations were engraved.

Boudinot's Command

Elias Boudinot was the son of a silversmith, and did have some rudimentary metalworking knowledge in addition to his extensive legal and political experience. He served on the third committee for the design of the Great Seal. Boudinot was commissary general for prisoners during the Revolutionary War, was elected President of the Continental Congress for a one year term in 1782, and served as a Trustee for the College of New Jersey (now Princeton University) from 1772 to 1821.

Boudinot compiled all of the responses to the questions asked by the Committee on the Mint, and prepared a report which was communicated to the House of Representatives on February 9, 1795. As Boudinot surely needed more than a few days to write the report, Robert Hilt's supposition of January, 1795 is probably correct for Scot's submittal of the engraver's report, although he may have started gathering information in December, after most of the 1794 dies had been completed.

In the report to Congress, Elias Boudinot downplayed the negative aspects of Scot's response along with other responses by Mint Officers, only giving a brief description of the Engravers duties. Boudinot generalized the problems of the Mint, “in general, the difficulties attending all establishments, that are, in their formation and operation, new and uncommon, and which, therefore, require experiments to be made in every step of their progress, have attended this institution.”

Recommendations for improvements were given, such as an appointment of a refiner and melter, stated amounts for charges to bullion depositors, and that distribution of cents should be made in proportion to the population of each State. A bill was introduced that passed on March 3, enacting all recommendations, with the exception of increasing the fineness of silver to .900. Boudinot's optimistic forecast, "most of these difficulties are now surmounted, and the future product of the coinage must be very considerable" certainly had a strong influence on Congress to keep the Mint in operation. Congress would continue to criticize the institution in coming years, but fortunately the Mint was never abolished.

The report by the Committee on the Mint was one of the last actions by Elias Boudinot as a member of Congress, as he resigned shortly afterwards. The illustrious David Rittenhouse also resigned as the first Director of the US Mint on June 30, 1795, from failing health. Henry William De Saussure then only lasted a few months as the second Mint Director, resigning in October of 1795, and immediately replaced by Elias Boudinot.

Information gathered in by Boudinot while leading the Committee on the Mint would serve as a basis for one of his first actions as Mint Director. On November 2, 1795 "Orders and Directions for conducting the Mint of the United States" was published, which included process descriptions for the various functions of the Mint.

Boudinot incorporated Scot's suggestion for separating the forging and hardening duties from the engraver's office, "the Chief Coiner's clerk will do the like for the Hardening of Dies." Further, "He [Engraver] will be allowed a Forger & Hardener of Dies to prepare and temper the same," and, "the hardener of Dies is to forge all the Dies directed by the Engraver, within the Mint, and not in any other place. He is without delay to harden or otherwise complete, every Die delivered to him by the Engraver."¹² Adam Eckfeldt became "Die Forger and Turner" by October of 1795, and later became Chief Coiner after the death of Henry Voigt in 1814. Eckfeldt's skill in hardening dies with improved processes greatly extended the longevity of working dies, which accommodated higher mintages.¹³

A refined description of the Engraver's duties was outlined in Boudinot's November document, which added a new reporting function for Scot, "He will report to the

Director every Monday Morning the Number of Dies with their Denominations, which he shall have delivered to the Hardener of Dies, to be hardened the preceding Week.” Scot could request help for this function, if desired, “The Director’s clerk will assist the Engraver when necessary in making out his returns.” Most importantly, Scot was now required to proactively prepare dies for each denomination group, “to provide a number of each denomination on hand as to prevent unnecessary delays that may be occasioned by breaking.”

Robert Scot’s Engraving Report gives a rare glimpse into the early engraving and die sinking processes of the First United States Mint, and the issues they encountered. Scot objectively addressed the challenges confronted by the offices of the Coiner and Engraver to the Congressional Committee on the Mint, enabling Elias Boudinot to have a better understanding of the problems faced by the Mint when he was appointed as Director.

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Matthew Carey Correspondence

Library of Congress www.loc.gov
Papers of Thomas Jefferson
American State Papers

National Archives and Records Administration (NARA) Mid Atlantic Region
Record Group 104: Records of the United States Mint at Philadelphia
1. General Correspondence, 1792-1899
3. Letters Sent, 1795-1804
14. Anonymous Letters Received, 1792-1900
M64 microfilm: Letters Sent from the Director (available for sale to the public)

Newspapers:

Claypoole's American Daily Advertiser (Philadelphia), 1796-1800.

Dunlap's American Daily Advertiser (Philadelphia), 1791-1795.

Gazette of the United States (Philadelphia), 1790-1804.

Pennsylvania Gazette, 1780-1815.

Pennsylvania Mercury, and Universal Advertiser, 1784-1792.

Pennsylvania Packet, 1780-1790.

Poulson's American Daily Advertiser, (Philadelphia) 1800-1820.

Articles, Books, and Encyclopedias:

Dobson, Thomas. *Encyclopædia: or a Dictionary of Arts, Sciences, and Miscellaneous Literature*. Philadelphia: Thomas Dobson, eighteen volumes published incrementally from 1790 to 1798, with a three volume supplement published from 1800-1803.

Hilt, Robert P. III. *Die Varieties of Early United States Coins*. Omaha, Nebraska: RTS Publishing Company, 1980.

Nyberg, Bill "Master Die and Hub Changes for 1801-1807 Half Dollars, And Integration with 1799-1804 Gold Eagle Reverses." *John Reich Journal*, Volume 18/ Issue 2 (June, 2007).

Sholley, Craig. "Early U.S. Minting Methods Part I: Die Forging and Hardening." *John Reich Journal*, Volume 15/Issue 1 (April, 2003).

———. "The Evolution of US Minting Technology 1792-1837 Part II: Early Die Making Procedures." *Penny-Wise*, Volume XLV, Number 5 (October 2011).

Silver, Rollo G. *The American Printer, 1787-1825*. Charlottesville, Virginia: The University Press of Virginia, 1967.

The Scot Engraving Report was printed with permission from the Mid Atlantic NARA. Photographs are by the author, and include the author's set of the *Encyclopædia*.

Endnotes

¹ Dobson. The *Encyclopædia* included 595 copperplate engravings, of which 222 were engraved by Scot and his apprentices. Of these, Robert Scot engraved 142, including 30 in V-1 and 43 in V-2. Scot had his apprentices initial their engravings, which was a unique practice among American engravers.

² NARA, RG 104, Folder 14, Anonymous Letters Received 1792-1900 (finding aid title). The notation written on the folder is "Anonymous and dateless letters to the Mint 1792-1904. Box 1, NC-152, E-14, HM1992."

³ Hilt, p 5.

⁴ American State Papers, Report by the Committee of the Mint to the House of Representatives, February 9, 1795.

⁵ The problems described by Scot are congruous with the excellent research and articles on die making by Craig Sholley in the *John Reich Journal* and *Penny-Wise*.

⁶ Lea & Febinger Records, Matthew Carey Correspondence, Historical Society of Pennsylvania.

⁷ Silver, p 153.

⁸ The "John Gardner Papers" at the Historical Society of Philadelphia are of a different person than John Smith Gardner.

⁹ NARA, RG 104, Folder 1, General Correspondence, John Smith Gardner to Elias Boudinot, February 18 1796.

¹⁰ The August 11, 1795 John Smith Gardner letter cannot currently be located at the Mint archives, despite a specific search for this letter by a NARA archivist. However, there is no reason to doubt its existence, as the letter was described by both Taxay and Hilt, and Gardner did receive an increase in pay from his request.

¹¹ Nyberg, *JRJ* Volume 18/Issue 2 p 47. John Dannreuther observed that some Heraldic Eagle design elements are the same, and some are different with various master dies and working hubs.. This indicates that master hubs for the Heraldic Eagle do not include certain features such as the eagle's head and tail feathers, which are added later in the master die, while other design elements are added to the working hub (E PLURIBUS UNUM lettering) and working dies (breast and neck feathers, legend lettering).

¹² NARA microfilm publication M64.

¹³ The Sholley articles describe in detail Eckfeldt's improved hardening processes, including "spray hardening."



Pre-Turban Bust Half Dollar Census

Stephen J. Herrman

Presented on the following pages is the report of the 2012 Pre-Turban Bust Half Dollar Census as compiled from submissions from our membership. The last census for 1794 to 1807 Bust half dollars appeared in Volume 20 / Issue 2 of the **John Reich Journal** in December 2009.

The number of known Pre-Turban die marriages continues to stand at 108. No new die marriages have been reported since the discovery of 1806 O.130 in February 2007. Not included in the count is the 1795 O.118 die marriage that remains unknown and possibly may not exist. The 1794 O.109 die marriage is included, but it has not been confirmed as a business strike to the satisfaction of some students of the series.

The rarity rating estimates used in this census report are based on the Bust Half Nut Club (BHNC) study presented at the August 2004 ANA convention and published in Volume 16 / Issue 3 of the **John Reich Journal** in June 2005. However, the rarity rating estimates for a few varieties have been adjusted downwards in this report, as new examples have surfaced.

This census report includes two main tables as follows:

The **Pre-Turban Bust Half Dollar Census – Top 15 Collections** table presents the census of the top 15 collections submitted. The submitters' JRCS membership numbers included in the top row on each page serve to identify individual collections. Note that the total, average, and maximum grade columns include all coins from all submissions.

The **Pre-Turban Bust Half Dollar Census By Grade** table presents the census of the top 15 coins for each variety, as graded by the submitters. Note that the total, average, and maximum grade columns include all coins from all submissions.

Following is a reference table listing the rarity rating levels used in this census report.

<u>Rating</u>	<u>Est Nbr</u>	<u>Rating</u>	<u>Est Nbr</u>	<u>Rating</u>	<u>Est Nbr</u>
R8	1-3	R6-	25-30	R4-	161-200
R7+	4-6	R5+	31-46	R3+	201-300
R7	7-9	R5	47-63	R3	301-500
R7-	10-12	R5-	64-80	R2	501-1000
R6+	13-18	R4+	81-120	R1	over 1000
R6	19-24	R4	121-160		

PRE-TURBAN BUST HALF DOLLAR CENSUS – TOP 15 COLLECTIONS

YEAR	VAR	R.	957	951	323	978	918	1006	1322	578	275	49	418	19	1256	233	869	TOT	AVG	MAX
1794	101	3+	10	12				15	25						12			5	15	25
	102	6+	6								35							2	21	35
	103	5+																		
	104	5	12	6					10									3	9	12
	105	5	3		8							4						3	5	8
	106	6-	12	8														2	10	12
	107	6	8	3														2	6	8
	108	7									10							1	10	10
	109	8																		
	110	7+									6							1	6	6
	111	8																		
1795	101	7									45							1	45	45
	102	4	12	10			20		4									5	11	20
	103	5	20	8									10					4	12	20
	104	4	10	8										15		20		4	13	20
	105	3+	15	8	15							15					10	7	12	15
	106	6	20	10			12				35							4	19	35
	107	5	8	10	10		12				15							5	11	15
	108	4	15	10			25											3	17	25
	109	4	10	10	15		12					10						5	11	15
	110	3	15	10	10		10		15			12						6	12	15
	111	4+	10	8	2		30				15		8					7	11	30
	112	4	12	12	8		25					8	40					6	18	40
	113	3	15	6	8	6	8				45		8					7	14	45
	114	6	15	6							25							4	13	25
	115	5	15	20	8		25											4	17	25
	116	4	25	10	10													4	13	25
	117	4	8	12			25				40							4	21	40
	118	-																		
	119	4	20	30							15							3	22	30
	120	7-	8	12							30							3	17	30
	121	4+	35	8	8													3	17	35
	122	5	10	10					50			4						4	19	50
	123	7-	30				15											2	23	30
	124	5	20	10			12											3	14	20
	125	4	15	12														2	14	15
	126	4+	10	6	8								8					4	8	10
	127	6+	10	10	12						20		10					5	12	20

PRE-TURBAN BUST HALF DOLLAR CENSUS – TOP 15 COLLECTIONS

YEAR	VAR	R.	957	951	323	978	918	1006	1322	578	275	49	418	19	1256	233	869	TOT	AVG	MAX
1795	128	5+	8	10	8		15						10					5	10	15
	129	5	25	20			12						45		25			5	25	45
	130	5-	15	6														2	11	15
	131	4+	12	15														2	14	15
	132	8																		
1796	101	5																		
	102	5+																		
1797	101	4+																		
	102	6-																		
1801	101	3	20	15	30	12		25	35	25				12		30	10	12	22	45
	102	4+	25	8	20	35	40	25	30			12			35			9	26	40
1802	101	3	40	15	10	35	30	45	20			35	53		45	30		14	30	53
1803	101	3	30	20	15	20	35	30	45	25		12			35	30		15	27	45
	102	3+	30	10	15	20		40				12						10	21	40
	103	3	45	40	12	35	35	45	40	35		15	40		25	40		15	32	45
	104	3	45	20	10	25	45	35	40			20			15	35		13	27	45
1805	101	3	40	15	10	20		45	50	40	58	15		15				11	31	58
	102	3	30	8	15	25	40	30	45			8	45			30		13	25	45
	103	5+	25	12	10	20	25	20	35									7	21	35
	104	5-	50	8	12	35	30	40	40						35			10	27	50
	105	5	40	6	20	30	35	30	25	15								10	24	40
	106	3+	35	20	30	30	40	40		20		15						10	26	40
	107	5	40	15	8	10	40	40	20			4						8	22	40
	108	4+	15	10	12	45	40	25										8	22	45
	109	4-	40	12	35	30	15	35		20		10						10	23	40
	110	5	30	10	20	30		40	45									6	29	45
	111	2	25	20	12	30	40	30		4		15	53	25		25	15	15	23	53
	112	2	35	20	35	15		53			50			25				9	32	53
	113	4+	25	15	35	15				20	30							6	23	35
	114	8																		
1806	101	3	40	10	15	35		25	58	40	8			20	45	35		14	28	58
	102	3+	35	12	15	35	30	25	58		63	15	45					12	29	63
	103	2	50	12	15	30	40	20		45		12	30					12	24	50
	104	4	40	20	20	30	25	40	40	40	35	20				30		15	26	40
	105	2	40	15	20	15	40	40		40	55	20	40				10	15	29	55
	106	4	40	35	25	12	8	45	55	30	40	30	50					13	32	55
	107	4+	30	20	40	35	40	35	45	30	40	30			30		12	15	29	45
	108	7									15							1	15	15

PRE-TURBAN BUST HALF DOLLAR CENSUS – TOP 15 COLLECTIONS

YEAR	VAR	R.	957	951	323	978	918	1006	1322	578	275	49	418	19	1256	233	869	TOT	AVG	MAX
1806	109	1	40	40	12	12	30	40	55	25	62	12	55	15			12	20	29	62
	110	6	8	15					12		45		30					5	22	45
	111	3	30	15	8	40	35	40	40	30	30	15	50	15	45	30		17	29	50
	112	4	15	10	15	20	40	45	45	35		12						11	24	45
	113	5	40	25	30	15	30	45	20									7	29	45
	114	4	50	12	30	40	25	40	45	30			40	12				13	33	50
	115	1	45	35	12	12	40	50	55	45	12	15			45		30	19	27	55
	116	3	50	50	15	30	55	35		20			40					11	32	55
	117	5-	40	12	8	30	12	45	25	10								9	21	45
	118	3	45	20	12	10				40	8	20	45	25				10	24	45
	119	3	35	12	8	20	35	40	62	40				30				10	29	62
	120	3	40	20	15	30	40	30	53	25					30	50		16	31	53
	121	4	20	10	8	35		30	58	20		15						11	26	58
	122	6+	8		20	25	20	30	25		35							8	21	35
	123	5-	40	8	20	15		20	45		8		40					9	24	45
	124	6	30	20	12	8	12	35		15	20		40					9	21	40
	125	5	30	45	12	15			25	15		25						7	24	45
	126	7-	15			15	8			25	20							5	17	25
	127	6+	3				10		12	12	25							6	11	25
	128	8																		
	129	8									6							1	6	6
	130	8																		
1807	101	5	20	25	8	15	53	20	50	25	40		15				8	14	21	53
	102	2	50	40	20	35		30	62	40							15	11	29	62
	103	3	35	40	8	25	40			50				40				11	29	50
	104	5-	40	15		40		53		25			40		40			8	36	53
	105	1	30	12	20	15	40	30		25	15	12		20		58	30	17	26	58
	106	3	35	20	8	20	30	20		25							20	10	20	35
	107	4+	45	15	12	15												7	17	45
	108	3	45	20	15	12		25		25								7	21	45
	109	3	30	25	4	35		40	62			15		15				13	25	62
	110	2	30	30	15	35	30	45		40		15		35				12	27	45
	115	7+	12															1	12	12
TOTAL VARS			92	85	66	55	54	49	41	38	36	34	26	15	14	12	12	765	24.0	
AVG GRADE			26	16	15	24	28	35	39	28	29	15	34	21	33	34	17			

PRE-TURBAN BUST HALF DOLLAR CENSUS BY GRADE

YEAR	VAR	R.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOT	AVG	MAX
1794	101	3+	25	15	12	12	10											5	15	25
	102	6+	35	6														2	21	35
	103	5+																		
	104	5	12	10	6													3	9	12
	105	5	8	4	3													3	5	8
	106	6-	12	8														2	10	12
	107	6	8	3														2	6	8
	108	7	10															1	10	10
	109	8																		
	110	7+	6															1	6	6
	111	8																		
1795	101	7	45															1	45	45
	102	4	20	12	10	10	4											5	11	20
	103	5	20	10	10	8												4	12	20
	104	4	20	15	10	8												4	13	20
	105	3+	15	15	15	12	12	10	8									7	12	15
	106	6	35	20	12	10												4	19	35
	107	5	15	12	10	10	8											5	11	15
	108	4	25	15	10													3	17	25
	109	4	15	12	10	10	10											5	11	15
	110	3	15	15	12	10	10	10										6	12	15
	111	4+	30	15	10	8	8	3	2									7	11	30
	112	4	40	25	12	12	8	8										6	18	40
	113	3	45	15	8	8	8	6	6									7	14	45
	114	6	25	15	6	6												4	13	25
	115	5	25	20	15	8												4	17	25
	116	4	25	10	10	8												4	13	25
	117	4	40	25	12	8												4	21	40
	118	-																		
	119	4	30	20	15													3	22	30
	120	7-	30	12	8													3	17	30
	121	4+	35	8	8													3	17	35
	122	5	50	10	10	4												4	19	50
	123	7-	30	15														2	23	30
	124	5	20	12	10													3	14	20
	125	4	15	12														2	14	15
	126	4+	10	8	8	6												4	8	10
	127	6+	20	12	10	10	10											5	12	20

PRE-TURBAN BUST HALF DOLLAR CENSUS BY GRADE

YEAR	VAR	R.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOT	AVG	MAX
1795	128	5+	15	10	10	8	8											5	10	15
	129	5	45	25	25	20	12											5	25	45
	130	5-	15	6														2	11	15
	131	4+	15	12														2	14	15
	132	8																		
1796	101	5																		
	102	5+																		
1797	101	4+																		
	102	6-																		
1801	101	3	45	35	30	30	25	25	20	15	12	12	10	10				12	22	45
	102	4+	40	35	35	30	25	25	20	12	8							9	26	40
1802	101	3	53	45	45	40	35	35	30	30	30	20	20	15	12	10		14	30	53
1803	101	3	45	40	35	35	35	30	30	30	25	20	20	15	15	12	12	15	27	45
	102	3+	40	40	30	20	20	15	15	12	10	8						10	21	40
	103	3	45	45	40	40	40	40	35	35	35	30	25	25	20	15	12	15	32	45
	104	3	45	45	40	35	35	35	25	20	20	20	15	10	8			13	27	45
1805	101	3	58	50	45	40	40	30	20	15	15	15	10					11	31	58
	102	3	45	45	40	30	30	30	25	20	15	15	8	8	8			13	25	45
	103	5+	35	25	25	20	20	12	10									7	21	35
	104	5-	50	40	40	35	35	30	15	12	8	8						10	27	50
	105	5	40	35	30	30	25	20	20	15	15	6						10	24	40
	106	3+	40	40	35	30	30	20	20	20	15	8						10	26	40
	107	5	40	40	40	20	15	10	8	4								8	22	40
	108	4+	45	40	25	20	15	12	12	10								8	22	45
	109	4-	40	35	35	30	20	20	15	12	10	8						10	23	40
	110	5	45	40	30	30	20	10										6	29	45
	111	2	53	40	30	30	25	25	25	20	20	15	15	15	15	12	4	15	23	53
	112	2	53	50	35	35	35	25	20	20	15							9	32	53
	113	4+	35	30	25	20	15	15										6	23	35
	114	8																		
1806	101	3	58	45	40	40	35	35	35	25	20	15	15	12	10	8		14	28	58
	102	3+	63	58	45	35	35	30	25	15	15	12	12	8				12	29	63
	103	2	50	45	40	30	30	20	20	15	12	12	8	8				12	24	50
	104	4	40	40	40	40	35	30	30	25	20	20	20	20	12	12	12	15	26	40
	105	2	55	40	40	40	40	40	40	30	20	20	20	15	15	15	10	15	29	55
	106	4	55	50	45	40	40	35	30	30	30	25	20	12	8			13	32	55
	107	4+	45	40	40	40	35	35	30	30	30	30	20	20	15	12	10	15	29	45
	108	7	15															1	15	15

Pre-Turban Bust Half Dollar Census

PRE-TURBAN BUST HALF DOLLAR CENSUS BY GRADE

YEAR	VAR	R.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOT	AVG	MAX
1806	109	1	62	55	55	40	40	40	40	35	30	30	25	25	20	15	15	20	29	62
	110	6	45	30	15	12	8											5	22	45
	111	3	50	45	40	40	40	35	35	30	30	30	30	20	15	15	15	17	29	50
	112	4	45	45	40	35	20	15	15	15	12	12	10					11	24	45
	113	5	45	40	30	30	25	20	15									7	29	45
	114	4	50	45	40	40	40	40	35	30	30	30	25	12	12			13	33	50
	115	1	55	50	45	45	45	40	35	30	30	30	20	20	15	12	12	19	27	55
	116	3	55	50	50	40	35	30	30	20	20	15	4					11	32	55
	117	5-	45	40	30	25	12	12	10	8	6							9	21	45
	118	3	45	45	40	25	20	20	15	12	10	8						10	24	45
	119	3	62	40	40	35	35	30	20	12	10	8						10	29	62
	120	3	53	50	45	40	40	35	35	30	30	30	25	20	20	20	15	16	31	53
	121	4	58	35	35	35	30	25	20	20	15	10	8					11	26	58
	122	6+	35	30	25	25	20	20	8	8								8	21	35
	123	5-	45	40	40	20	20	20	15	8	8							9	24	45
	124	6	40	35	30	20	20	15	12	12	8							9	21	40
	125	5	45	30	25	25	15	15	12									7	24	45
	126	7-	25	20	15	15	8											5	17	25
	127	6+	25	12	12	10	4	3										6	11	25
	128	8																		
	129	8	6															1	6	6
	130	8																		
1807	101	5	53	50	40	25	25	20	20	15	15	12	8	8	4	4		14	21	53
	102	2	62	50	40	40	35	30	20	15	12	12	3					11	29	62
	103	3	50	40	40	40	35	30	25	20	20	8	8					11	29	50
	104	5-	53	40	40	40	40	35	25	15								8	36	53
	105	1	58	58	40	35	30	30	30	25	20	20	20	15	15	12	12	17	26	58
	106	3	35	30	25	20	20	20	20	15	8	8						10	20	35
	107	4+	45	15	15	12	12	12	8									7	17	45
	108	3	45	25	25	20	15	12	8									7	21	45
	109	3	62	55	40	35	30	25	15	15	15	15	15	4	4			13	25	62
	110	2	45	40	35	35	30	30	30	30	15	15	12	8				12	27	45
	115	7+	12															1	12	12
TOTAL VARS			97	91	84	77	68	59	54	46	42	37	29	23	19	14	11	765	24.0	
AVG GRADE			37	30	27	25	24	23	21	19	18	17	16	14	13	12	12			

NOTICE: CAPPED BUST HALF DOLLAR COLLECTORS

Capped Bust Half Dollar Census information for R4 to R8 die marriages is now being solicited for inclusion in the next issue of the **John Reich Journal**.

Please send your complete inventory listing (including ALL duplicates and die states) of R4 to R8 Capped Bust Half Dollar die marriages to Steve Herrman.

Email: **Herrman102@aol.com**

FAX: **303-989-6393**

Note: The top 15 collections shall each be identified by the JRCS membership number of the submitter. Duplicates will be counted and reported as part of the totals. Your personal census will be kept strictly confidential, and shall not be used for any other purpose.

List of R4 to R8 Capped Bust Half Dollar Die Marriages

Year	Var	R.	Year	Var	R.	Year	Var	R.	Year	Var	R.	Year	Var	R.
1807	111	4+	1818	110	4	1826	114	4+	1827	138	4	1831	117	4
1808	110	4+	1818	115	4+	1826	115	5-	1827	139	4-	1831	120	6
1809	101	5	1819	103	4	1826	119	4-	1827	140	4+	1832	109	4
1809	104	5-	1819	106	4	1826	120	4-	1827	144	5+	1832	114	4+
1809	108	4	1820	104	4+	1827	103	4	1827	145	5	1832	117	4+
1809	110	4+	1820	107	5	1827	108	4-	1827	147	4	1832	119	4-
1809	112	5-	1822	102	4+	1827	109	4-	1827	148	6+	1832	123	7
1809	113	5	1822	103	5-	1827	110	4-	1827	149	8	1833	111	4+
1809	114	5	1822	112	4	1827	111	4	1828	105	5	1833	115	5+
1811	102	4	1823	102	4	1827	113	4-	1828	106	4+	1833	116	7
1811	107	4	1823	109	5+	1827	116	4+	1828	111	4	1834	118	4
1811	112	4-	1823	113	7	1827	122	5	1828	123	5+	1834	119	4
1811	113	5	1824	102	5+	1827	123	5-	1829	106	5-	1834	120	4
1812	101	5-	1824	112	4	1827	124	5+	1829	109	4+	1834	122	7
1813	102	4	1824	114	5-	1827	127	5	1829	118	4+	1835	111	8
1813	104	4	1825	103	4-	1827	128	4-	1829	120	8	1836	103	4-
1814	106	4+	1825	104	4+	1827	129	4-	1830	105	4	1836	105	4-
1817	102	7-	1825	109	5	1827	133	4	1830	112	4+	1836	107	4
1817	104	6	1825	117	4	1827	134	4	1830	114	5	1836	120	4-
1817	105	4-	1825	118	8	1827	136	4	1831	113	4	1836	121	5+
1817	108	4	1826	103	5-	1827	137	6	1831	115	4	1836	123	4



Bust Coin Obverse Star Patterns

David Finkelstein

Collectors of Bust obverse Small Eagle reverse coins know that that the majority of these coins have 15 obverse stars. If you assume that the obverses are arranged with 8 stars on the left and 7 stars on the right (or 8 X 7), then you would be correct for 81% of the known obverse dies. Do you know the other 15 star configurations? Are there other obverse dies mated with Small Eagle reverses that have different star counts?

Collectors of Bust obverse Heraldic Eagle reverse coins know that that the majority of these coins have 13 obverse stars. If you assume that the obverses are arranged 7 X 6, then you would be correct for 74% of the known obverse dies. Do you know the other 13 star configurations? Are there other obverse dies mated with Heraldic Eagle reverses that have different star counts?

Table 1 identifies the known obverse star configurations on all Bust silver and gold coins with either the Small Eagle or Heraldic Eagle reverse.

Table 1 - Obverse Star configurations For SE & HE Reverses

Obv Star Pattern	# Dies	SE Reverse Die Marriages	HE Reverse Die Marriages
None	1	0	2
6 X 7	2	0	2
7 X 6	136	3	213
8 X 5	44	1	78
9 X 4	1	0	1
8 X 7	67	101	0
10 X 5	16	20	5
8 X 8	2	1	1
9 X 7	4	6	0
10 X 6	2	1	3
11 X 5	1	2	1
12 X 4	1	1	0
Total Dies	277	136	306

Here are the keys for interpreting the table:

- The number in the “# Dies” column is the number of known obverse dies with that star configuration, regardless of denomination. If an obverse die is reused for multiple die marriages, it is counted only once.
- The number in the “SE Reverse Die Marriages” column is the number of die marriages with that obverse star configuration, regardless of denomination, with Small Eagle reverses.
- The number in the “HE Reverse Die Marriages” column is the number of die marriages with that obverse star configuration, regardless of denomination, with Heraldic Eagle reverses.
- Example: Of the 277 different obverse dies that are used with Small Eagle and Heraldic Eagle reverses, only 2 obverse dies have 10 stars on the left and 6 stars on the right (10 X 6). Those 2 obverse dies were used to create 4 die marriages. 1 die marriage has a Small Eagle reverse and 3 have a Heraldic Eagle reverse.

Some conclusions can be made from the data in Table 1. Note my use of the weasel word probably. Since I was not at the Mint from 1794 through 1807, I cannot state that my conclusions are 100% accurate.

1. Fact: 8 of the 12 different obverse star configurations have 4 or fewer known obverse dies associated with them.

Conclusion: These 8 configurations were probably prototypes. The Mint tested them by placing them into production to strike coins, then probably decided to not implement their specific star configurations.

2. Fact: 8 X 7 and 10 X 5 are the only known 15 obverse star configurations. There are 67 known obverse dies and 101 known die marriages with the 8 X 7 star configuration. There are 16 known obverse dies and 25 known die marriages with the 10 X 5 star configuration.

Conclusion: The 10 X 5 star configuration was probably not a prototype as a fair number of obverse dies are known.

3. Fact: 8 X 5 and 7 X 6 were the two preferred 13 obverse star configurations.

Conclusion: The 6 X 7 and 9 X 4 star configurations were probably prototypes, as only 3 obverse dies are known for both star configurations.

4. Fact: There are 5 different 16 obverse star configurations.

Conclusion: The Mint probably experimented on how to implement dies with 16 obverse stars. Since only 10 obverse dies are known, all 16 star obverse configurations were probably prototypes.

5. Fact: 83 obverse dies with 15 stars were used to create the 121 known Small Eagle die marriages and 5 known Heraldic Eagle die marriages.

Conclusion: 15 star obverses were primarily used with Small Eagle reverses.

6. Fact: 183 obverse dies with 13 stars were used to create the 294 known Heraldic Eagle die marriages and 4 known Small Eagle die marriages.

Conclusion: 13 star obverses were primarily used with Heraldic Eagle reverses. Some questions arise as a result of reviewing Table 1. Additional information is required to answer these questions.

Why Is There 1 Obverse Die With No Obverse Stars?

I have no idea. This die is 1796 \$2 1/2 Quarter Eagle BD Obverse 1. Robert Hilt II, on page 97 of *Die Varieties of Early United States Coins* states:

“The first group of quarter eagle dies has the handicap of having only the first die, obverse number 1, completed with sixteen (16) stars. The star punch evidently broke and the second die was completed without the obverse stars”.

Robert Hilt provided no evidence to support his statement that the star punch broke. Although this was his reason for the no stars obverse, mine is simply “I don’t know”. Unless documentation is found in Mint archives or we can travel back in time to 1796, we will never know. Maybe Robert Hilt’s statement is correct, or maybe this was simply a prototype die for testing an obverse die with no stars.

Were Transitional DMs Created From The SE / HE Changeover?

A *transitional* die marriage occurs when both obverse and reverse designs change. Either an old style obverse die is mated with a new style reverse die, or a new style obverse die is mated with an old style reverse die. Examples of two well known transitional die marriages are (1) the 1840 Medium Letters Seated Half Dollar (a Seated Half obverse mated with a Bust Half reverse), and (2) the 1841-O With

Drapery Closed Bud Seated Dime (the With Drapery obverse mated with the No Drapery reverse).

Although some transitional die marriages are scarce or rare and bring huge premiums, some are relatively common. Keep in mind that it was not the Mint's intention to specifically create transitional die marriages. Their job was to strike coins with the dies available. The phrase "transitional die marriage" was created by the numismatic community.

121 of the 126 known die marriages with 15 obverse stars have Small Eagle reverses. 5 die marriages have Heraldic Eagle reverses. These 5 die marriages have their obverse stars arranged 10 X 5, and are:

1. 1795 \$5 BD-13 Unique
2. 1795 \$5 BD-14 R.6+
3. 1795 \$5 BD-15 R.5+
4. 1797 \$5 BD-6 Unique
5. 1797 \$5 BD-7 R.6+

According to *Appendix C of Early U.S. Gold Coin Varieties*, the last 5 Half Eagle die marriages in the emission order sequence that have 15 obverse stars are the 5 die marriages listed above. Also, according to *Appendix C*, 5 of the first 6 die marriages in the emission order sequence that have Heraldic Eagle reverses are the 5 die marriages listed above. These 5 die marriages are transitional die marriages because they have old style 15 star obverses mated with new style Heraldic Eagle reverses. As a bonus, the obverse dies are at the end of the emission order sequence for 15 obverse star usage, and the reverse dies are at the beginning of the emission order sequence for Heraldic Eagle usage.

294 of the 298 known die marriages with 13 obverse stars have Heraldic Eagle reverses. 4 die marriages have Small Eagle reverses. These 4 die marriages are:

1. 1797 Half Dime LM-4 R.6 (7 X 6 obverse stars)
2. 1797 Dime JR-2 R.4 (7 X 6 obverse stars)
3. 1798 \$1 B-1 BB-82 R.3 (7 X 6 obverse stars)
4. 1798 \$5 BD-1 R.7 (8 X 5 obverse stars)

All 4 die marriages are at the end of their respective denominations emission order sequence for Small Eagle reverses. They are also the first die marriage for their respective denominations to have a 13 star obverse. These 4 die marriages are transitional die marriages because they have new style 13 star obverses mated with old style Small Eagle reverses.

Why 15 Obverse Stars?

Vermont became the 14th state on March 4, 1791 and Kentucky became the 15th state on June 1, 1792. When the Mint began striking silver coins dated 1794, there were 15 states. In addition, the *Flag Act of 1794* was signed into law by President George Washington on January 13, 1794. It specified that effective May 1, 1795, the flag would contain 15 stars and 15 red and white stripes.

Table 2 breaks down the number of known obverse dies for silver and gold coins by the year on the obverse and the number of obverse stars. As per Table 2, each of the 60 known obverse dies dated 1794 and 1795 have 15 stars, and 16 of the 20 known obverse dies dated 1796 also have 15 stars. There is no doubt in my mind that 15 stars represented the 15 states. As far as I know, every numismatic researcher and author believes this also.

Table 2 – Known Silver & Gold Coin Obverse Dies By Year

Obverse Date	# Obv Dies	# Dies 0 Stars	# Dies 15 Stars	# Dies 16 Stars	# Dies 13 Stars
1794	10	-	10	-	-
1795	50	-	50	-	-
1796	20	1	16	3	-
1797	16	-	6	7	3
1798	32	-	1	-	31
1799	21	-	-	-	21
1800	19	-	-	-	19
1801	9	-	-	-	9
1802	15	-	-	-	15
1803	15	-	-	-	15
1804	10	-	-	-	10
1805	18	-	-	-	18
1806	26	-	-	-	26
1807	16	-	-	-	16
Total	277	1	83	10	183

Why 16 Obverse Stars?

Since 15 obverse stars represented 15 states, it is safe to assume that 16 stars represented 16 states. As far as I know, every numismatic researcher and author believes this also. Although Tennessee's state constitution was adopted at the Tennessee Constitutional Convention in February, 1796, it officially became the 16th state on June 1, 1796. If obverse dies were created with 16 stars to represent 16 states, then these obverse dies would have been created on or after June 1, 1796. Although simply stated, this may be impossible to prove.

There are multiple occurrences where the Mint struck coins with both used and unused obverse dies dated with prior years. I am not aware of any coin that was struck with a future year, therefore I do not believe that the Mint would create obverse dies with 16 stars in anticipation of Tennessee becoming the 16th state. That would have been expensive and a potential waste of die steel and labor, especially if Tennessee's admission date of June 1, 1796 was extended to later in the year or 1797.

Emission order sequences and delivery warrants for the various silver and gold denominations are not helpful here. Emission order sequences tell us in what order the dies were used and reused. They do not tell us when the dies were made, in which order they were made, or when the dies were used to strike the coins. Delivery warrants tell us how many coins of a specific denomination were delivered, and on what date they were delivered. They do not tell us which die marriages were delivered or how many of each die marriage were delivered. It is therefore not possible to state with 100% certainty that all 16 star obverse dies were created after June 1, 1796. It is, however, reasonable to assume this. My reasons are as follows:

1. As per Table 2, there are no obverse dies dated 1794 or 1795 with 16 obverse stars.
2. As per Table 2, there are only 10 obverse dies with 16 stars; 3 dated 1796 and 7 dated 1797. As per Table 1, there were 5 different star configurations for these 10 obverse dies. 16 star configurations were, in my opinion, prototypes.
3. Although engravers can create dies reversed intaglio and envision what the struck coins will look like, it is difficult for most people to view a set of dies and conceptualize the resulting coins. Why would the Mint create 1796 dated dies with 16 obverse stars, but use them in 1797 or later years?
4. Wouldn't the decision makers within the Mint want to see the results of their prototypes as soon as possible to determine if they should be continued or discarded?

Why 13 Obverse Stars?

There were 10 obverse dies with 16 stars. The obverse star configurations were 8 X 8, 9 X 7, 10 X 6, 11 X 5, and 12 X 4. It appears to me that the Mint was not sure which star configuration to use to represent the 16 states. If the Mint could not decide on a 16 star configuration, what would they do when there were 17 states, 18 states, 19 states or more? Also, there wasn't enough room on the obverse dies for additional stars unless the stars were reduced in size or the obverse was redesigned. An implementation strategy was required for the obverse stars.

The decision to create obverse dies with 13 stars was one of the greatest decisions that the Mint ever made. The 13 stars clearly represented the original 13 colonies / states. As per Table 2, with the exception of 1 obverse die with 15 stars dated 1798, all obverse dies dated 1798 to 1807 have 13 obverse stars.

Conclusions

1. The changeover from the Small Eagle reverse to the Heraldic Eagle reverse created transitional die marriages. Although the authors of the Half Dime, Dime, Dollar and Gold references identified that the 9 transitional die marriages identified in this article were peculiar, they never labeled the die marriages as being transitional.
2. The 16 obverse star experiment created some interesting and unique prototype configurations. It was, in my opinion, an experiment that never made it into full production.
3. The Mint also experimented with two 13 star configurations; 6 X 7 and 9 X 4.
4. Like the 16 star configurations, these two configurations were prototypes that never made it into full production.

To be continued...

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2. Federal Half Dimes 1792-1837, Russell J. Logan, John W. McCloskey.
3. Early United States Dimes 1796-1837, David J. Davis, Russell J. Logan, Allen F. Lovejoy, John W. McCloskey, William L. Subjack.
4. Early United States Quarters 1796-1838, Steve M. Tompkins.
5. Early Half Dollar Die Varieties 1794-1836, Author Al C. Overton, Editor Don Parsley.
6. The United States Early Silver Dollars from 1794-1803, M. H. Bolender.
7. Silver Dollars & Trade Dollars Of The United States, A Complete Encyclopedia, Volume One, Q. David Bowers & Mark Borckardt.
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The 1834 Classic Half Eagle Patterns ??

David Davis

I am not aware of any modern counterfeit Classic half eagles in the market so a collector new to the series can avoid one problem that plagues some of the later date half eagle issues. That having been said there are at least three known contemporary counterfeit 1834 half eagles in copper. Since the first documented appearance in 1865, they have long been catalogued as patterns. Listed in the 1913, Edgar H. Adams & William H. Woodin's, *United States Pattern, Trial, and Experimental Pieces*, A.W.- 40 was described as an "1834 HALF EAGLE. Copper. From the regular dies of the second type of the year, in which the motto E PLURIBUS UNUM is omitted. Plain Edge. R13." and, subsequently, starting in the 1959, J. Hewitt Judd's, *United States Pattern, Experimental and Trial Pieces* as J-51 plain edge (PE). The J-51a variety with reeded edge (RE) first appears in the 1970, 4th edition of Judd, and these coins have been repeatedly labeled as patterns. In 1994, Andrew W. Pollock's *United States Patterns and Related Issues* listed them as; "1834" "**Half Eagle.** Obverse and reverse: The dies used to coin regular-issue 1834 Classic Head type \$5 pieces." "**52. Copper. Reeded Edge.** Unique(?). Judd-51a, Taxay-EP66[1975 edition], (not in [R. Coulton] Davis [*Patterns and Experimental Issues of the United States Mint*] or Adams-Woodin). The Breen variety number has not been ascertained by the writer. Don Taxay offers a tentative pedigree for the one known specimen of the variety as follows: (A) Fewsmith; Bangs & Co. sale of April 1876; W.J. Jenks; Ely." And "**53. Copper. Plain edge.** Rarity-8. AW-40, Judd-51, Taxay-EP67, (not in Davis). (1) R. Hughes, July 1980, Great '80, Lot 160*. (A) B. Reed; Omaha City Library, Inv. No.P-329, 107.2 grains."

I am not sure when the first suspicion arose about whether or not these patterns were genuine but Superior's February 3-5, 1991:1610 listing reads, "1834. **Pattern Half Eagle. Judd-51a. Rarity-8. Reeded Edge. Very Fine 30. Brown.** Regular dies trial piece struck in copper. A very rare Pattern from an early period in American numismatics. Few Patterns are found prior to Gobrecht's Silver Dollars. This coin, while a tad worn, was apparently softly struck also as the denticles, stars, and legends blend in with the field somewhat. Careful examination is recommended. The milling is somewhat irregular below the date. This coin is sold "As is."" It sounds like there might have been some doubt in the mind of their cataloguer. The lot realized \$550. The coin is plated in the catalog and can also be seen at www.uspatterns.com, the website for The Society of U.S. Pattern Collectors (Society).

The eighth edition of *United States Pattern Coins, Experimental and Trial Pieces America's Rarest Coins*, published by Whitman Publishing, LLC in 2003, was edited by Q. David Bowers and states, "At least one well known piece (Byron Reed example) has been found to be a counterfeit." and that, "No positively authentic specimens of either edge variety has been seen by the major contributors to this text." Here is the continuation of the story.

I agree with Society's pedigree for the Byron Reed PE piece going back to Lorin G. Parmelee, but it also needs to include George S. Seavey. In the Strobridge descriptive catalogue of the Seavey collection, dated 1873, which was bought by Lorin G. Parmelee, Lot 854 stated, "1834 HALF-EAGLE. Struck in copper. 4(good)." It probably was a PE variety because the New York Coin & Stamp Co. listing in the Parmelee sale 6/25-6/1890:23 reads, "1834 Half Eagle: same as regular issue, but in *copper*: plain edge: only specimen we have seen; fine." It realized \$1.75. What isn't known is who were the earlier owners. I don't agree with the Society's pedigree information for the J-51a/P-53 reeded edge coin. As noted above Superior's J-51a is not the same as the R. Hughes J-51 noted below.

The reeded edge variety has a very confusing pedigree due to the information Don Taxay published in the 1971, *Scott's Comprehensive Catalogue and Encyclopedia of U.S. Coins*. His "U.S. Mint Essays, 1794 to date" number 19-A is described as, "Half Eagle. New type, without E PLURIBUS UNUM. Copper. R.E. Unique?" and pedigreed as "Apparently Fewsmith-Bangs & Co. sale April 1876 – W. J. Jenks – Ely, where described as Good or V.G. Possibly the same as the Mickley coin." and later authors have used the same quote, minus Mickley, without being able to see the coins or checking the actual catalogues. E.L. Mason sold the Wm. Fewsmith collection, including an extensive group of patterns, October 4-7, 1870. Lot 1149 read, "1834; Half Eagle; copper: very good." The April 1876 reference must relate to the Bangs, Mervin & Co. sale of the Lewis White collection, which was catalogued by E. Cogan, and sold April 17, 18, 1876. Lot 656 was described as, "1834 Five Dollar Gold piece. Struck in copper. Good and very scarce." I am not sure why Taxay didn't agree with the present day assumption that the RE coin is unique and I am guessing that he left the W.E. Woodward, Jos. J. Mickley 10/28/1867:2143 "Half-Eagle of 1834, in copper, the new type: extremely rare, perhaps unique." coin out of the pedigree due to the lack of any edge description.

I believe the Mickley specimen probably was the reeded edge variety or Woodward would have mentioned it. The first appearance of both the PE and RE together was the W.E. Woodward sale of the Wm. J. Jenks collection September 1,2,3, 1880. Lot 1384 "1834 Half Eagle; copper, milled edge, good, scarce." went for the princely sum of \$0.27. Interestingly enough the PE, lot 1385 "1834 Same; plain edge, good." with no mention of rarity reached \$0.41. One also has to wonder if Woodward knew of the second example of the PE variety. Did he see the Parmelee coin at some time during the seven intervening years? The Taxay reference to Ely is puzzling. Neither Heman Ely, who had an extensive list of patterns when his collection was sold by W.E. Woodward 1/8-10/1884, nor Foster Ely whose collection was sold by Lyman Low 11/29-30/1886 included any copper 1834 half eagles. John W. Adams, *United States Numismatic Literature*, Vol. 1, lists two other Foster Ely sales, J.W. Scott's, 11/17/1888 and H. Chapman's, Thompson/Ely, 5/13/1915, but they too lacked any half eagle patterns. Maybe I am missing something.

It is going to require an extensive catalogue search to see if I can locate more than the two references to either of the coins during the century between 1880 and 1980 when Robert Hughes next sold the PE piece. See the C. Fisher listings below. The other is the 1955, B. Max Mehl listing. His Collins/Mays sale 10/25/1955:446 contained a RE specimen described as, "1834 \$5.00. Type of the second issue. Struck in copper. This pattern is listed in A-W No. 40, but is described as plain edge. This specimen is with milled edge. It seems to have been cleaned and has some evidence of circulation. I do not have any pedigree of it, so I'm offering it only as is." and it realized \$2.25. In Hughes's Great '80 sale, 7/18/1980, Lot 160 was described as, "1834 J-51 (R-8) XF-45, a choice example and one of only two known. The regular dies trial piece without the motto "E PLURIBUS UNUM" on the reverse." Selling during the frenetic coin market of the 1980s, it realized \$2500.

One of the more puzzling things to me is the question of whether or not the pieces were actually gold washed when made so that they would pass for a gold coin. If we assume they were made circa late-1830s it seems strange that there would be no trace of gold left on the coins thirty years later, or whenever the first person came up with idea to call them die trials.

What I do know is that both a plain edge coin and a reeded edge coin reside in my collection. They are apparently cast copies of JM-501 half eagle variety and counterfeit. I don't know who was responsible for once again pairing up the two varieties. I purchased them together some years back from an intermediary who knew of my interest in Classic half eagles. Whoever the intervening purchaser or purchasers were, they lost a considerable amount of money along the way as I paid substantively less for them than they realized at auction.

The reeded edge specimen, even though catalogued as VF-30, is the better looking of the two examples with very minor pitting and just a couple of raised bumps under the tip of the bust. The irregular reeding mentioned in Superior's description seems to relate to what looks like a mold seam that runs through the reeding from below the date to star 11. The central devices and the reeding look very good but the stars, letters, and dentils look a little washed out. The coin weighs 104.9 grains and has a diameter of .895/.901. I can no longer see any sign of the cleaning mentioned by Mehl. The plain edge specimen has a lot more pitting, especially the obverse, and has the edge reeding and mold seam filed away. It weighs 103.4 grains and has a diameter of .887/.901. Unless there are more than three examples total, which seems unlikely after all of these years, I now have two J-51 and J-51a pattern / counterfeit copper 1834 half eagles with a lot of history and great pedigrees.

E. Cogan 10/16/1865:527 "1834 \$5 Gold Piece in Copper, size 1" (need PRL, buyer?)

W.E.W. - Mickley 10/28/1867 (see above) (need buyer and PRL)

Leonard Bird 11/17/1869:271 "1834, Five Dollar Gold Piece, copper, fair." It sold for \$0.30 (does a copy exist with buyers names?)

E.F. Mason – Wm. Fewsmith 10/4/1870:1149 (see above)

W.E.W. 12/16/1879:1852 "1834 Half Eagle ; struck in copper." (need buyer and PRL)

W.E.W. 9/1/1880 – see above (need buyer's names)

N.Y.C.& S. – Parmalee 6/25/1890 – see above

Charles Fisher 4/1/1933:475 "Half Eagle in Copper, A & W. No.40 From regular dies second type. Without Motto. Excessively Rare. Only 4 or 5 issued. Fine." (need PRL, buyer?)

Charles Fisher 3/14/1936:786 "1834 Pattern from regular dies, no Motto, similar to A & W #40 but has reeded edge. Fine." (need PRL, buyer?)

What their value is today is questionable. I am not sure whether they would be worth more to a collector of classic half eagle varieties, of which there probably are less than a handful in numismatics, or as a compatible collectable.

I have reported my ownership of the above two pieces to the Society and both varieties are now listed as cast counterfeits.

Steigerwalt 4/11/1870:148 – need (questionable citation, too early for Steigerwalt)

E. Cogan 11/7/1877:1226 – need (questionable citation, no copper half eagle in sale)

Kagins 10/25/1981:2411 (ditto above)

Editors Note:

This unfinished article was in David Davis' computer when he passed away. John McCloskey Submitted as it was found for publication. The thought being that David's research should not be lost to the numismatic community. Even in its unfinished condition, this article offers much to the collector/researcher of our early coinages. Our gratitude goes to not only the genius of the author, David Davis, but to John McCloskey for seeing that it was published to be part of numismatic history.



Robert Hilt's Group Strength Theory

David Finkelstein

In my JRJ article titled “*Heraldic Eagle Die Analysis – Reverse Star Patterns*”, I explained Robert Hilt’s *Group Strength Theory*: As per my JRJ article:

“Hilt explained his *Group Strength* theory on page 5 of *Die Varieties Of Early United States Coins*. This theory is relatively unknown to many in the numismatic community, and in my opinion it is a valid and extremely important theory. To paraphrase, Hilt stated that Robert Scot reported to a Congressional committee in 1795 that one die took several days to complete. Based on rarity ratings and known die states, we know today that many dies failed relatively quickly or were used extensively until they wore out. When a die became unusable while in the screw press, it would not be practical for the Mint to halt coining operations for a few days and wait for a new die to be created. Instead, the Mint had multiple completed obverse and reverse dies stored in reserve.

When a die became unusable, a replacement die could be used in its place to keep production going. The trick was to have the appropriate number of completed obverse and reverse dies in reserve. This number of dies was Hilt’s “*Group Strength*”. Each denomination had its own Group Strength because there were different production demands for each denomination. For example, since Half Dollars were minted in much larger quantities than Quarter Eagles, the Half Dollar Group Strength was larger than the Quarter Eagle Group Strength.

Hilt theorized that as dies became unusable during production and were replaced from the Group Strength, it was the Engraving Department’s responsibility to create new dies to maintain each denomination’s Group Strength. As a result, the Engraving Department was continually creating new dies to replace older dies when they wore out, failed, got damaged or otherwise became unusable”.

Hilt’s Group Strength Theory is a great theory. Unfortunately, Hilt provided no proof, evidence or hearsay for his theory. I am unaware of any Mint related document that specified that “x” number of this die or “y” number of

that die were made in advance in case of a failure during production. Hilt, in my opinion, “reverse engineered” his Group Strength Theory based on his analysis of the characteristics of the obverses and reverses of the coins, and his interpretation of Congressional documents. Hilt’s reference did not contain references to any Congressional documents.

I have located three documents that were provided to Congress during 1795 that may provide evidence that Hilt’s Group Strength Theory is valid. Congressional reports and documents presented to Congress from March 3, 1789 to March 3, 1815 were printed in “*American State Papers. Documents, Legislative and Executive, of the Congress of the United States*”, 1832. Two Mint documents provide certain key facts.

First, on February 9, 1795, Elias Boudinot, “from the Committee appointed to examine and report on the state of the mint”, communicated his Committee’s report to The House of Representatives, Figure 1 is a section of one paragraph from that report.

It was also a considerable time before
an engraver could be engaged, during which, the chief coiner was obliged to make the dies for himself, and *yet* the
dies are subject to frequent failures by breaking.

Figure 1 – From The Committee Report, Dated February 9, 1795.

The text is as follows:

“It was also a considerable time before an engraver could be engaged, during which, the chief coiner was obliged to make the dies for himself, and yet the dies are subject to frequent failures by breaking”.

Second, on October 27, 1795, Henry William De Saussure, wrote a report on the “past operations and actual situation” of the Mint immediately after he resigned as its Director. That report was presented to The House of Representatives on December 14, 1795. Figure 2 is one paragraph from De Saussure’s report.

More than once, as I have been informed, the operations have been suspended, for want of dies, which the industry of the engraver could not supply fast enough for the presses. A happier selection of steel, aided by more skill in hardening the dies, has remedied this evil, and the engraver is now enabled to supply the mint with dies of every kind, in advance.

Figure 2 – From De Saussure's Report, Dated October 27, 1795.

The text is as follows:

“More than once, as I have been informed, the operations have been suspended, for want of dies, which the industry of the engraver could not supply fast enough for the presses. A happier selection of steel, aided by more skill in hardening the dies, has remedied this evil, and the engraver is now enabled to supply the mint with dies of every kind, in advance”.

From these two paragraphs written in 1795, we learn that:

1. Prior to Robert Scot's appointment, on November 23, 1793, as Chief Engraver, Henry Voigt made dies for Half Cents and Large Cents.
2. Dies frequently cracked or broke.
3. On multiple occasions, coinage operations were suspended because the dies in use broke, and there were no replacement dies for the denomination being coined.
4. The engraver (Robert Scot, Henry Voigt and possibly one or more of the assistant engravers) could not make dies fast enough because (a) there were issues with the quality of the die steel, and (b) there were issues with the process for hardening the softened die steel into a production ready die.
5. Note that if Working Dies could not be hardened properly, it may be reasonable to assume that there were issues with hardening the Master Dies and the Hubs.

6. As of October, 1795 (at the latest), Robert Scot was able to create dies for all denominations, in advance. This was a direct result of higher quality die steel, fine tuning the process for hardening the dies, and improved skill of the people working at the Mint. Note that the key phrase here is “**in advance**”.

The above mentioned documents, in addition to being presented to Congress, were no doubt read by the Secretary of the Treasury, and the President of the United States. One can imagine how Mint personnel felt after these documents were released. Those running the government were informed that minting operations were sometimes halted because Mint personnel could not do the job they were hired to do... make money.

Elias Boudinot became Director of the Mint in late October, 1795. Figure 3 contains the mintage figures, by denomination, from his report on the Mint, dated December 3, 1795. The number of coins minted, since the establishment of the Mint, clearly identify that there were more Cents coined than any other denomination. The denominations, from most coined to fewest coined, were as follows: Cents, Half Dollars, Dollars, Half Cents, Half Dimes, Half Eagles, and Eagles.

The issues of the mint, from its first establishment to this day, as collected from the register kept for that purpose, consist of

Eagles,	-	-	-	-	-	-	-	-	-	-	2,795
Half Eagles,	-	-	-	-	-	-	-	-	-	-	8,707
Dollars,	-	-	-	-	-	-	-	-	-	-	201,791
Half dollars,	-	-	-	-	-	-	-	-	-	-	322,144
Half Dimes,	-	-	-	-	-	-	-	-	-	-	86,416
Cents,	-	-	-	-	-	-	-	-	-	-	1,066,033
Half Cents,	-	-	-	-	-	-	-	-	-	-	142,534
Total in Dollars,	-	-	-	-	-	-	-	-	-	-	153,541 80

Figure 3 – From Boudinot’s Report, Dated December 3, 1795.

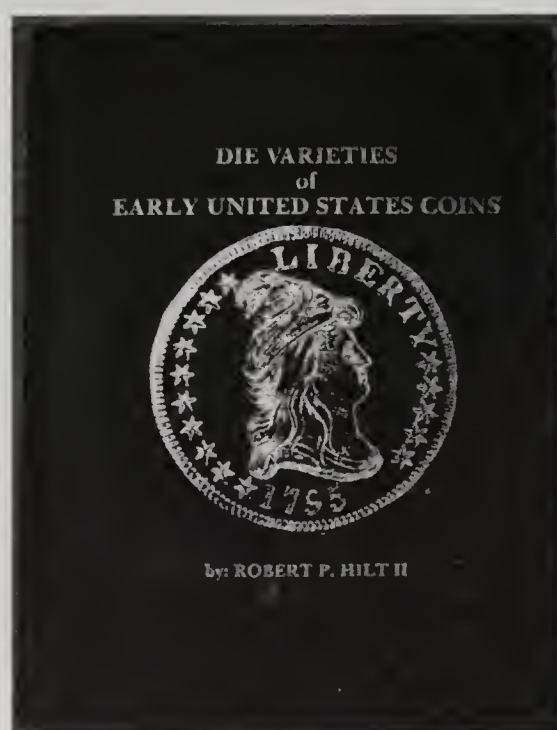
Based on the data in Figure 3 and assuming equal die life for all dies (which we know is not true, but assume it anyway), there would have been a need for more Cent dies (the denomination minted in the largest quantity), than Half Dollar dies than Dollar dies ... than Eagle Dies (the denomination minted in the smallest quantity). As Chief Engraver, Robert Scot would have been aware of the coinage requirements. Since he also knew that dies were frequently failing, he would have made more dies, in advance, for the denominations with higher production requirements. Likewise, he would have

made fewer dies, in advance, for the denominations with lower production requirements. The number of dies made in advance was Robert Hilt's *Group Strength*.

Although there is circumstantial evidence to prove Robert Hilt's *Group Strength Theory*, we may never know if Robert Scot actually implemented something like it as a Standard Operating Procedure at the Mint in Philadelphia. Do not assume that the people employed at the Mint were inept wannabes because they lived during the 18th and early 19th centuries. They were visionaries, inventors, and skilled craftsmen, creating new tools, machinery and processes, and at the forefront of new technologies. If we can reverse engineer what they probably did 220 years ago, chances are they probably did something close to it.

References

1. Die Varieties of Early United States Coins, Robert P. Hilt II
2. American State Papers. Documents, Legislative and Executive, of the Congress of the United States", 1832.



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